**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C.**

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| In the Matter of | ) | |
| | ) | |
| Revision of the Commission's Rules | ) | CC Docket No. 94-102 |
| To Ensure Compatibility with | ) | RM-8143 |
| Enhanced 911 Emergency Calling Systems | ) | |

# REPORT AND ORDER
# AND
# FURTHER NOTICE OF PROPOSED RULEMAKING

**Adopted: June 12, 1996** **Released: July 26, 1996**

**Comment Date: August 26, 1996** **Reply Date: September 10, 1996**

By the Commission: Commissioner Chong is issuing a statement.

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# I. INTRODUCTION

1. By our action today we are taking several important steps to foster major improvements in the quality and reliability of 911 services available to the customers of wireless telecommunications service providers. Our decisions in this Report and Order reflect our longstanding and continuing commitment to manage use of the electromagnetic spectrum in a manner that promotes the safety and welfare of all Americans. In addition, our Further Notice of Proposed Rulemaking represents our desire to ensure continuity of our dedication to new and innovative 911 services by seeking comment on further refinements of our wireless 911 rules.

2. The principal issue in this phase of the Docket 94-102 rulemaking proceeding[1] involves the steps the Commission should take to optimize the delivery and processing of 911 calls and to prompt the accelerated delivery of enhanced wireless 911 features and functions to administrators of Public Safety Answering Points (PSAPs), to assist them in responding to emergency calls for assistance. We believe that it is critically important that rigorous enhancement criteria be established, that firm target dates for implementation be set, and that reasonable cost recovery mechanisms be encouraged as a means of ensuring that implementation goals can be achieved. The actions we take in this Report and Order are designed to accomplish these objectives -- we believe that we are taking reasonable and effective steps to promote cooperative efforts by state and local governments, PSAP administrators, wireless carriers, and equipment manufacturers that will lead to improved wireless 911 services.

# II. OVERVIEW

## A. Value of 911 Services

### 1. Overall Growth in Usage

3. Dialing 911 is the most effective and familiar way the American public has of finding help in an emergency. Since it was first introduced in 1968, 911 service has spread across the Nation and become synonymous with emergency assistance. Nationwide, 95 million 911 calls are made each year, or 260,000 every day.[2] These calls are typically routed by local exchange carriers (LECs) to PSAPs staffed by professionals trained to assist callers in need of emergency assistance and to direct calls to police, fire, and health emergency response providers. The 911 systems in place today encourage those providing communications services and those providing emergency assistance to coordinate their efforts and facilities and work together, resulting in the

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[1] We began this rulemaking with the issuance of a Notice of Proposed Rulemaking on October 19, 1994. Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket 94-102, RM-8143, Notice of Proposed Rulemaking, 9 FCC Rcd 6170 (1994) (*Notice*). The *Notice* also sought comment regarding the compatibility of private branch exchanges (PBXs) with E911 emergency calling systems. We will address these issues in a separate proceeding.

[2] *Notice*, 9 FCC Rcd at 6171 (para. 3).

saving of lives and property.[3]

4. In the basic form of 911, the attendant who receives the 911 call at the PSAP gathers all the necessary information about the nature and location of the emergency by questioning the caller. Over the last decade, most 911 systems and PSAPs have been upgraded to enhanced 911 (E911), which adds features that permit more efficient and speedy response by emergency service personnel. When a wireline 911 call is placed in a region with E911 capability, the telephone number of the phone used for the call is typically passed to the LEC central office. A database, usually maintained by the LEC, is then used to selectively route the call to the most appropriate PSAP. In addition, the caller's telephone number and other useful information are transmitted to the PSAP along with the location of the telephone, based on LEC records.[4]

5. E911 saves lives and property by helping emergency services personnel do their jobs more quickly and efficiently. Automatic Location Identification (ALI) capability permits rapid response in situations where callers are disoriented, disabled, unable to speak, or do not know their location. In these situations, ALI permits the immediate dispatch of emergency assistance to the address of the wireline phone. ALI also reduces errors in reporting the location of the emergency and in forwarding accurate information to emergency personnel. Where telephone exchange boundaries extend into two or more PSAP jurisdictions, the ALI feature permits selective routing (SR) of calls to the appropriate PSAP for the identified location. A dispatcher at a PSAP with E911 capability can also call back in the event the call is disconnected. Currently, 89 percent of wireline phones in the United States are served by 911, and about 85 percent of 911 services include some form of E911.[5]

**2. Reliance on 911 by Wireless Service Users**

6. Although 911 was originally developed for wireline telephones, wireless customers place a large and increasing portion of 911 calls. According to the Cellular Telecommunications Industry Association (CTIA), virtually all cellular carriers today provide basic 911 service or some close alternative. In 1994, almost 18 million wireless calls were made to 911 and other public service numbers. The number of such calls is growing rapidly, spurred by the rapid growth in cellular subscribers. The total number of cellular subscribers in the United States currently exceeds 33 million, and 9.6 million new subscribers were added in 1995 alone.[6] The

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[3] *See* ``The National Policy for Emergency Telephone Number `911'," prepared by Executive Office of the President, Office of Telecommunications Policy, Mar. 21, 1973, *attached in* Oregon Comments at Exhibit B.

[4] Joint Comments of APCO, NENA, and NASNA (APCO Comments) at 9-11, 27; *Notice*, 9 FCC Rcd at 6171 (paras. 4-6).

[5] *See Notice*, 9 FCC Rcd at 6171 (paras. 3, 6).

[6] According to the latest semi-annual report prepared by CTIA, a total of 33.8 million people were cellular customers in the United States at the end of 1995, a 40 percent rise compared with the 24 million

roll-out of broadband Personal Communications Service (PCS), now underway, will increase the number of mobile phones and wireless 911 calls.[7] With this growing popularity of mobile communications has come a recognition on the part of wireless customers that their phone provides them with a valuable communications link in emergencies. According to a recent survey, for example, 62 percent of cellular users cited safety and security as their main reason for purchasing a mobile phone.[8]

7. Wireless carriers currently provide access only to basic 911 service, not to the advanced features of E911. The mobile nature of wireless technology creates complexities for providing even basic 911 service. For example, a wireless 911 caller may not be a subscriber of the wireless provider with coverage in the area and therefore 911 calls may be blocked. Also, there may be technical reasons such as the use of different protocols that may lead to blocked 911 calls. Moreover, the nature of wireless technology and service presents significant obstacles to making E911 effective for wireless calls. For example, selective routing of calls to the appropriate PSAP is complicated by the fact that a cellular caller is often moving and the transmission may be received at more than one cell site. Automatically identifying the location of a wireless caller also presents new technological and policy issues.

### 3. Current Service Limitations; Commission Responsibilities

8. One of the Commission's statutory mandates under the Communications Act is ``promoting safety of life and property through the use of wire and radio communication."[9] Recognizing this responsibility, the Commission has expressed increasing concern regarding the inability of wireless customers to benefit from the advanced emergency capabilities of E911 systems that are available to most wireline customers. In developing rules for broadband PCS, we urged industry and standards-setting bodies to direct particular attention to E911 access, including, to the extent feasible, automatic location of callers.[10] We recognized that the health and safety of citizens would be affected by whether broadband PCS carriers are capable of providing E911 access that is equivalent to access provided to wireline customers. While we declined to delay the introduction of broadband PCS service until E911 issues had been resolved, we stated our intention to initiate a proceeding to address E911 and related issues with regard to

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customers reported in 1994. CTIA gathered data on current cellular systems, but did not include PCS customers. *See* ``CTIA's Newest Report Shows 40 Percent Customer Growth," Radio Communications Report, Mar. 25, 1996, at 4.

[7] *Notice*, 9 FCC Rcd at 6172 (paras. 9-10).

[8] Lockheed Reply Comments at 6.

[9] Section 1 of the Communications Act, 47 U.S.C. § 151.

[10] Amendment of the Commission's rules to Establish New Personal Communications Services, GEN Docket No. 90-314, Second Report and Order, 8 FCC Rcd 7700 (1993) (*PCS Second Report and Order).*

broadband PCS, cellular, and any other relevant mobile service.[11]

9. The *Notice* in this docket began that endeavor. In adopting this Report and Order, we are promulgating requirements and establishing a framework to improve wireless 911 services. We believe that these actions will result in the deployment of technologies that will help speed the delivery of assistance to people in need of help in emergency situations. It is important, however, to acknowledge what we are *not* able to achieve in this Order. We recognize that expanding the availability and increasing the reliability of wireless 911 service depend upon more than actions that we are able to take at this time.

- The implementation of E911 service will require a separate decisional process by many state and local public safety organizations to invest in facility and equipment upgrades to be able to receive E911 call location information.

- Proper incentives should be developed to encourage wireless service providers to transition to improved and more extensive network technology and infrastructures in order to provide more reliable 911 service coverage over wider geographic areas. We must ensure that reasonable requirements and incentives are in place to facilitate the application of this technology to improve wireless 911 services. For example, we need to explore further the steps that can be taken to improve upon the ALI specifications we are adopting in this Order.

- Solutions to wireless service interoperability should be pursued in order to reduce current limitations on the ability of callers to switch from one provider's network to another as the caller roams between wireless systems.

- We need to explore further the steps that can be taken to improve upon the ALI specifications we are adopting in this Order. As technology leads to the development of cost effective location systems that can improve upon the accuracy and reliability standards we are adopting, we must ensure that reasonable requirements and incentives are in place to facilitate the application of this technology to improve wireless 911 services.

- We need to explore further means of improving consumer education so that users of wireless services will be able to determine rationally and accurately the scope of their options

These are some of the goals that the Commission, state and local governments, the wireless industry, and PSAP organizations should strive to achieve during the five-year period for implementing enhancements to wireless 911 services. The Further Notice of Proposed Rulemaking we are adopting today will serve as one means for the pursuit of these goals. One of our principal objectives is to make sure that ongoing processes are in place that will make technological advances available to 911 service providers, and that will give PSAP

[11] *PCS Second Report and Order*, 8 FCC Rcd at 7756 (para. 139).

administrators the means to acquire and utilize these new technologies. Such a process will ensure that users of wireless services will receive effective and reliable 911 services.

## B. Executive Summary of Commission Actions

### 1. Report and Order

10. In this proceeding, we adopt several requirements pursuant to our authority under Sections 301 and 303(r) of the Communications Act, and make them applicable to all cellular licensees, broadband PCS licensees, and certain Specialized Mobile Radio (SMR) licensees (as defined in Section IV.B.2, *infra*). These classes of licensees are hereafter referred to as ``covered carriers." Certain other SMR licensees and Mobile Satellite Service (MSS) carriers are exempt from our requirements. The requirements we adopt in this Report and Order are as follows:

- Not later than 12 months after the effective date of the rules adopted in this proceeding, covered carriers must process and transmit to any appropriate PSAPs all 911 calls made from wireless mobile handsets which transmit a code identification,[12] including calls initiated by roamers. The processing and transmission of such calls shall not be subject to any user validation or similar procedure that otherwise may be invoked by the covered carrier.

- In the case of 911 calls made from wireless mobile handsets that do not transmit a code identification, not later than 12 months after the effective date of the rules adopted in this proceeding, covered carriers must process and transmit such calls to any appropriate PSAP which previously has issued a formal instruction to the carrier involved that the PSAP desires to receive such calls from the carrier.

- Not later than 12 months after the effective date of the rules adopted in this proceeding, covered carriers must be capable of transmitting calls by individuals with speech or hearing disabilities through devices used in conjunction with or as a substitute for traditional wireless mobile handsets, *e.g.*, through the use of Text Telephone Devices (TTY) to local 911 services.

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[12] The term ``code identification,"when used in this Order in conjunction with 911 calls, means (1) in the case of calls transmitted over the facilities of a covered carrier other than a Specialized Mobile Radio carrier that is subject to the requirements of this Order, a call originated from a mobile unit which has a Mobile Identification Number (MIN); and (2) in the case of calls transmitted over the facilities of a Specialized Mobile Radio carrier that is subject to the requirements of this Order, a call originated from a mobile unit which has the functional equivalent of a MIN. A MIN is a 34-bit binary number that a PCS or cellular handset transmits as part of the process of identifying itself to wireless networks. Each handset has one MIN, and it is derived from the ten-digit North American Numbering Plan (NANP) telephone number that generally is programmed into the handset at the time service for a new subscriber is initiated. *See, e.g.*, EIA/TIA Standard 553, Mobile Station - Land Station Compatibility Specification, September 1989, at 2.3.1.

- The implementation and deployment of enhanced 911 features and functions will be accomplished in two phases. Under Phase I, not later than 12 months after the effective date of the rules adopted in this proceeding, covered carriers must have initiated the actions necessary to enable them to relay a caller's Automatic Number Identification (ANI) and the location of the base station or cell site receiving a 911 call to the designated PSAP. Not later than 18 months after the effective date of the rules adopted in this Order, such carriers must have completed these actions. These capabilities will allow the PSAP attendant to call back if the 911 call is disconnected.

- Under Phase II, not later than five years after the effective date of the rules adopted in this proceeding, covered carriers are required to achieve the capability to identify the latitude and longitude of a mobile unit making a 911 call, within a radius of no more than 125 meters in 67 percent of all cases.

11. We also provide that the E911 (Phase I and Phase II) requirements imposed upon covered carriers by our actions in this Order shall apply only if (1) a carrier receives a request for such E911 services from the administrator of a PSAP that is capable of receiving and utilizing the data elements associated with the services; and (2) a mechanism for the recovery of costs relating to the provision of such services is in place. If the carrier receives a request less than 6 months before the implementation dates of Phase I and Phase II, then it must comply with the Phase I and Phase II requirements within 6 months after the receipt of the notice specifying the request.

12. Covered carriers, in coordination with the public safety organizations, are directed to resolve certain E911 implementation issues, including grade of service and interface standards, through industry consensus in conjunction with standard-setting bodies. This Commission intends to remain actively involved, as appropriate, to ensure resolution of issues necessary to prompt widespread availability of E911 service.

**2. Further Notice of Proposed Rulemaking**

13. The E911 system requirements we are establishing in this Order are a first step toward our goal of improving the availability and quality of 911 service. In view of the Nation's important public safety needs, we find a compelling public interest in taking steps to ensure that E911 system performance keeps pace with the latest technologies. Therefore, we are also issuing a Further Notice of Proposed Rulemaking to develop additional means of ensuring that improvements made possible by technological advances are incorporated into E911 systems.

14. In the Further Notice of Proposed Rulemaking, we tentatively conclude and request comment as follows:

- We seek comment on possible approaches to avoid customer confusion that could be generated by a system under which customers in the same geographic area may or may not

be able to complete non-code identification[13] 911 calls depending upon the practices of the various PSAPs serving that area. Specifically, we request comment regarding whether, within a reasonable time after the one-year period, PSAPs should no longer have the option to refuse to accept non-code identification 911 calls. Thus, covered carriers would be obligated to transmit all 911 calls to PSAPs.

- We tentatively conclude that covered carriers should continue to upgrade and improve 911 service to increase its accuracy, availability, and reliability, while also recognizing that our rules should ensure that covered carriers' development and application of new technologies for E911 services also contribute to the overall quality of service and range of services that carriers provide to all their customers. These efforts will ensure that the public benefits from technological innovations, through the application of those innovations to public safety needs.

- We seek comment on a range of related issues, including the following: (1) Should covered carriers provide PSAPs information that locates a wireless 911 caller within a radius of 40 feet, using longitude, latitude, and altitude data, and that provides this degree of accuracy for 90 percent of the 911 calls processed? (2) Should wireless service providers be required to supply location information to the PSAP regarding a 911 caller within a certain number of seconds after the 911 call is made? (3) Should wireless service providers be required to update this location information throughout the duration of the call? (4) What steps could be taken to enable 911 calls to be completed or serviced by mobile radio systems regardless of the availability (in the geographic area in which a mobile user seeks to place a 911 call) of the system or technology utilized by the user's wireless service?

- We also tentatively conclude that a consumer education program should be initiated to inform the public of the capabilities and limitations of 911 service, and we seek comment regarding the scope of such a program and carrier obligations that could be established in connection with such a program. One purpose of such a program would be to address a concern that consumers currently may not have a sufficient understanding of technological limitations that can impede transmission of wireless 911 calls and the delivery of emergency assistance.

## III. BACKGROUND OF PROCEEDING

### A. Joint Paper; JEM Report

[13] The term ``non-code identification,"when used in this Order in conjunction with 911 calls, means a call originated from a mobile unit which does not have a code identification. *See* note **Error! Bookmark not defined.**, *supra.*

15. Public safety organizations and the wireless telecommunications industry have both recognized the limitations that the unique characteristics of wireless communications impose on current emergency service systems, and have been exploring paths to deliver E911 to wireless customers. On June 30, 1994, the Association of Public-Safety Communications Officials International, Inc. (APCO), the National Emergency Number Association (NENA), and the National Association of State Nine One One Administrators (NASNA), and the Personal Communications Industry Association (PCIA) issued an ``Emergency Access Position Paper'' (Joint Paper), which they filed as an *ex parte* comment in the PCS proceeding. In July 1994, representatives of the wireless telecommunications community and the emergency service and public safety community undertook a joint examination of the issues related to wireless support of 911.

16. The two communities convened a Joint Experts Meeting (JEM) in October 1994, including representatives of communications, public safety, satellite, Specialized Mobile Radio, and intelligent vehicle highway system (IVHS) industries, as well as vendors to these industries. The outcome of this meeting was a JEM Report that included a prioritized list of PSAP service requirements, the mapping of emergency services features to evolutionary paths showing which features need to be upgraded, identification of information elements transferred between the wireless system and the emergency service system, and the identification of radio location techniques that may provide wireless ALI. The JEM meeting and report, however, did not produce wireless E911 standards or any firm plan or schedule for implementing wireless E911.

**B. Wireless E911 Notice of Proposed Rulemaking**

17. In the *Notice*, we stated our belief ``that Commission action is necessary to ensure that, over time, mobile radio service users on the public switched telephone network have the same level of access to 911 emergency services as wireline callers."[14] We thus proposed to require that mobile radio transmitters supplied to wireless customers provide the same level of access to 911 emergency services as is available to wireline customers.[15] We did not anticipate adopting extensive technical standards for E911 operation -- a task for which standards-setting committees are better equipped -- but proposed that general performance criteria be adopted.[16]

18. With respect to the most crucial E911 feature, the ability to report the caller's location to the PSAP, we tentatively concluded that ALI should be implemented by wireless carriers in three steps over five years:

- We proposed that wireless carriers would be required to design their systems so that the location of the base station or cell site receiving a 911 call from a mobile unit would be

[14] *Notice*, 9 FCC Rcd at 6176 (para. 37).

[15] *Id.*

[16] *Id.* at 6177 (para. 40).

relayed to the PSAP. This requirement would take effect within one year after the effective date of the Order adopting rules in this proceeding.

- Within three years, the wireless service provider would be required to include an estimate of the approximate location and distance of the mobile unit from the receiving base station or cell site.

- After five years, the location of the mobile unit would be identified within three dimensions, within a radius of no more than 125 meters. We reasoned that this information should enable the PSAP to assist emergency service personnel by providing a relatively precise location for a wireless 911 caller.[17]

19. We also discussed and sought comment on a range of other issues, principally issues that must be resolved in order to implement the wireless E911 capabilities identified as essential by the wireless industry and public safety groups. These issues are summarized in Table A in Appendix D.

20. In response to the *Notice*, over 110 parties filed comments and reply comments regarding the wireless 911 issues, including wireless service providers, public safety organizations, equipment manufacturers, and others.[18] In addition, a Petition for Rulemaking was filed on October 27, 1995, by the Ad Hoc Alliance for Public Access to 911 (Alliance) requesting that 911 access be provided to any cellular phone, regardless of whether it is listed as a cellular carrier's subscriber, and that mobile handsets be equipped to select and use the channel with the strongest cellular signal whenever a 911 call is placed . On November 13, 1995, the Commission sought comment regarding this Petition.[19] In response to our Public Notice, eight comments and one set of reply comments were filed.

## C. Consensus Agreement

21. In the initial comment round, the wireless industry and representatives of public safety organizations generally supported the goals of the *Notice*, including the benefits and importance of deploying wireless E911 capability. Broadly speaking, the industry and public safety groups differed principally with regard to the schedule for E911 deployment and the need for Federal regulation. The public safety community supported the proposed mandatory five-

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[17] *Id.* at 6178-79 (paras. 49-51).

[18] A list of these pleadings, as well as related pleadings filed in the docket, is included in Appendix A. Abbreviations used in this Order in citing to pleadings also are included in Appendix A.

[19] Public Notice, Commission Seeks Comment on Petitions for Rulemaking filed by Ad Hoc Alliance for Public Access to 911 in Conjunction with Wireless Enhanced 911 Rulemaking Proceeding, CC Docket No. 94-102, Nov. 13, 1995; 60 FR 58593 (Nov. 28, 1995).

year schedule for full E911 implementation by wireless carriers.[20] The wireless carriers, on the other hand, generally opposed a fixed schedule.[21]

22. On February 12, 1996, after the comment cycle had closed, a Consensus Agreement on some of the issues in this proceeding was filed with the Commission by the Cellular Telecommunications Industry Association (CTIA), a trade association representing certain wireless industry participants (including service providers, manufacturers, and others) and three national public safety organizations -- APCO, NENA, and NASNA. The Commission sought comment regarding the Consensus Agreement,[22] and 17 comments and 14 reply comments were filed.

23. The Consensus Agreement proposes a two-step implementation schedule for wireless E911. In Phase I, within 12 (according to the public safety signatories) or 18 months (according to CTIA) after the adoption of a Commission Order,[23] the Agreement proposes implementation of cell site information, calling party Automatic Number Identification (ANI), 911 availability from any service initiated mobile handset that is subscribed to the wireless carriers on whose system the call is made, 911 access for speech and hearing-impaired callers using TTY devices, and call-back capability. Under Phase II, within five years, the Consensus Agreement proposes to require deployment of ALI for wireless callers in two dimensions, latitude and longitude, within 125 meters Root Mean Square (RMS), of the call's origination. In addition, the Consensus Agreement provides that ``[i]n moving to Phase II, a cost recovery mechanism is needed to fund both carrier (wireless and wireline) and PSAP investment in E911 technology and 911 cost of service."[24] The parties request the Commission: (1) to declare that state and local 911 fees and taxes are not barred as a matter of law and that such fees and taxes should not discriminate between wireline and wireless carriers involved in delivery of 911 services; and (2) to resolve carrier and public safety legal liability issues. The Consensus Agreement also suggests consumer education rather than equipment labelling to inform customers regarding wireless compatibility with E911 features. The Consensus Agreement is summarized in Table B in Appendix D.

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20 *See, e.g.*, APCO Reply Comments at 33.

21 *See, e.g.*, CTIA Comments at 6-7; PCIA Comments at 1, 15-20.

22 Public Notice, Commission Seeks Additional Comment in Wireless Enhanced 911 Rulemaking Proceeding Regarding ``Consensus Agreement" Between Wireless Industry Representatives and Public Safety Groups, CC Docket No. 94-102, DA 96-198, Feb. 16, 1996; 61 FR 6963 (Feb. 23, 1996).

23 CTIA believes 18 months from the adoption of rules in this proceeding is a realistic frame for implementation of Phase I, while the public safety organizations prefer the 12 months suggested in the *Notice*. *See* Consensus Agreement at 1, n.1.

24 Consensus Agreement at 3 (footnote omitted).

## IV. DISCUSSION

### A. General 911 Service Requirements and Provisions

#### 1. 911 Availability Without Customer Validation

##### a. Background, Pleadings, and Consensus Agreement

24. Adopting the Joint Paper's recommendations, the *Notice* proposed that, within one year after the effective date of rules adopted in this proceeding, a user must have the ability to reach emergency services from any service initialized mobile radio handset in a home service area, or when roaming, by dialing only 911, and that such 911 access should be available without a requirement for user validation. The *Notice* defined ``service initialization'' to mean that a ``user has purchased services from a wireless service provider.'' We asked commenters to describe the current status of these capabilities provided by wireless services, and the technical challenges for implementing these features. Specifically, commenters were asked to address the application of this feature to mobile radio handsets used on a ``roaming basis'' or outside a mobile radio service provider's roaming area. We also sought comment on the ability of licensees and equipment manufacturers to implement the features in the proposed time frame.[25]

25. Most of the wireless industry supported our proposal, although many suggested that it be required only where handsets are in proper working condition and that the public safety 911 infrastructure is available in the service area.[26] Commenters in general agreed with the proposal that mobile subscribers be permitted to reach 911 without dialing additional digits, with some commenters pointing out that cellular customers may need to press the ``SEND'' key.[27] While several commenters accepted ``service initialization'' as a reasonable limitation for 911 access,[28] other commenters urged the Commission to eliminate the ``service initialization'' requirement.[29] IAFC and IMSA, for example, urged the Commission to require that a host cellular provider process 911 calls from roamers without any need for PIN codes or ``service initialization.''[30] In

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[25] *Notice*, 9 FCC Rcd at 6177 (para. 41).

[26] *See, e.g.*, AT&T Comments at 20-21; PCIA Comments at 6-8; CTIA Comments at 1-3; CMT Comments at 2-3; SBC Comments at 9; GTE Comments at 12-13.

[27] *See, e.g.*, AT&T Comments at 24-25; Bell Atlantic Comments at 8; APCO Comments at 36; Ericsson Comments at 3.

[28] *See, e.g.*, APCO Comments at 36; TX-ACSEC Comments at 9.

[29] *See, e.g.*, Alliance Comments at 3; IAFC and IMSA Reply Comments at 4; GTE Reply Comments at 12; Vanguard Comments at 10.

[30] IAFC and AMSA Reply Comments at 4.

addition, Alliance argued that 911 calls should be made available for non-subscribers and that cellular telephones should be able to access the stronger of the two available signals in a market area.[31] Moreover, Motorola contended that a service initialized mobile unit is indistinguishable from a non-service initialized mobile unit unless the ``user validation" process distinguishes between them, and that the Commission must balance the objectives of not employing validation for roamer calls and employing user validation for non-roamer calls.[32]

26. In its Petition for Rulemaking, Alliance requested that the Commission amend Section 22.911(b) of the Commission's Rules to require cellular carriers promptly to connect all 911 calls without precondition. Alliance contended that the Commission should require the provision of unrestricted access in order to mitigate against the loss of life and the harmful effects of delays in treating serious illness and injuries.[33] It also proposed that Section 22.933 of the Commission's Rules be amended to require that all newly constructed mobile and portable stations be equipped to scan all of the control cellular telephone channels assigned to both System A and to System B, and to select and use the channel with the strongest signal whenever a 911 call is placed.[34] All of the commenters urged the Commission to deny Alliance's proposals.[35] For example, AT&T expressed concern regarding the imposition of additional costs on subscribers that could result from a requirement to transmit 911 calls from non-subscribers.[36]

27. The Consensus Agreement agrees with the *Notice*'s proposal regarding 911 availability without further discussion.[37] Some of the parties commenting regarding the Consensus Agreement once again raise the ``service initialization" requirement issue. Reiterating its arguments in the initial comments and in its Petition for Rulemaking, Alliance argues that public safety groups have been misled into signing the agreement, because it would block emergency calls to unauthorized roamers.[38] In its reply comments, Alliance proposes that cellular carriers should be required to connect any 911 call from any mobile handset with a

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[31] Alliance Comments at 3, 8.

[32] Motorola Comments at 22-23.

[33] Ad Hoc Alliance Petition for Rulemaking, filed Oct. 27, 1995 at 3.

[34] *Id.*

[35] We received eight comments and one reply comment. *See* Appendix A for the list of commenters on Alliance's Petition.

[36] AT&T Comments on Alliance Petition at 5-6.

[37] Consensus Agreement at 5.

[38] Alliance (CA) Comments at 11-17. (The abbreviation ``CA" is used to distinguish comments relating to the Consensus Agreement from comments filed in earlier stages of this proceeding).

unique Mobile Identification Number (MIN).[39] Alliance also states that it conducted a test in California in February 1996 which showed that significant areas in and around major cities could not be reached on the signal of one of the cellular licensees in those areas. In its view, this test proved its prior point that cellular phones must have the capability of selecting the strongest signal.[40] Scott Hong argues that a caller should have the ability to reach emergency services from any mobile radio handset regardless of its service initialization, on the grounds that many service initialized cellular phones become inactive and that the threat of prank calls is insignificant compared to the problem of the ever-increasing number of inactive cellular phones which may not be used to contact emergency services.[41]

28. Vanguard claims that as a policy matter it transmits 911 calls from any caller in Vanguard's territory with an activated cellular phone even when Vanguard has terminated the caller for non-payment or when a roamer's underlying carrier is delinquent in its account.[42] Vanguard distinguishes its practices of transmitting 911 from Alliance's initial request for unrestricted access to 911.[43] BellSouth states that Alliance's request for unconditional processing of 911 calls would create the potential for fraudulent and prank calls which could not be traced by the police.[44] GTE contends that a wireless carrier cannot handle emergency calls where 911 service is not provided or where it has not built out its network in accordance with its license requirements.[45]

**b. Discussion**

29. Based on our review of the record and our analysis, we conclude that, not later than 12 months after the effective date of the rules adopted in this proceeding, covered carriers must transmit to the appropriate PSAP all 911 calls from wireless mobile handsets which transmit a code identification, without requiring any user validation or similar procedure. We further conclude that, beginning not later than 12 months after the effective date of the rules adopted in this proceeding, covered carriers must transmit calls from wireless mobile handsets which do not transmit a code identification to any appropriate PSAP which has formally requested transmission of such calls. If a covered carrier does not receive such a request from a PSAP

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39 Alliance (CA) Reply Comments at 4-5.

40 Alliance (CA) Comments at 17-18.

41 Scott Hong (CA) Reply Comments at 1-2.

42 Vanguard (CA) Comments at 2.

43 Vanguard (CA) Reply Comments at 7.

44 BellSouth (CA) Comments at 10-11.

45 GTE (CA) Comments at 7.

before the end of the six-month period following the effective date of these rules, then the covered carrier will have six months from the date it receives a formal request from a PSAP to transmit 911 calls from handsets that do not transmit a code identification.

30. In the *Notice,* we proposed to require carriers to forward to PSAPs automatically (*i.e.,* without user validation) all 911 calls made from ``service initialized" handsets. We defined that term to include two kinds of users: (1) all of a carrier's subscribers in its home service area; and (2) all users authorized to roam on that carrier's network.[46] Upon reviewing the record, we conclude that the proposed requirement is defined too narrowly. If adopted, it would unreasonably prevent a significant number of wireless customers from accessing 911 service and also would result in unwarranted customer confusion.

31. We agree with Alliance and other public safety organizations[47] that there are significant public interest benefits to making it easier for individuals to place wireless 911 calls in emergencies.[48] We also conclude that user validation requirements harm the public interest because, by necessarily delaying call processing, they inhibit users' ability to make 911 calls in a timely manner. Such delay may not be substantial if, as the rule proposed in the *Notice* implicitly presumes, validation information about a large percentage of 911 callers is readily available in every instance. Such information *is* available if a carrier receives a 911 call from a person in one of the two groups covered by the rule proposed in the *Notice* -- *i.e.,* from one of its own subscribers, or from subscribers of other carriers with whom it has roaming agreements and shares roaming databases. In such situations, validation information typically is provided automatically by reference to these databases.

32. The universe of potential 911 callers, however, is somewhat larger than these two groups. It includes, for instance, subscribers of carriers with whom a particular carrier does not have a roaming agreement. Put another way, subscribers cannot be certain where they can place a 911 call unless they know the nature and extent of their home system's roaming agreements with other carriers. Where no such agreement exists, validation can be a long and cumbersome process. Users typically are required to supply credit card information, which must in turn be validated. The resulting call processing delay can be lengthy. Errors or other problems that occur during the validation process can further delay or block wireless 911 call processing. The result is a dangerous deferral of the 911 assistance process, and, effectively, the denial of such assistance in some instances. For example, any requirement that a caller supply a credit instrument in order to place a 911 call effectively places such calling capability beyond the reach of children, who do not typically possess such instruments, and others in emergencies who may not have access to that information. The safety of lives and property in emergency situations should not hinge on whether a person is carrying a valid credit card. For that reason, we will

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[46] *Notice,* 9 FCC Rcd at 6177 (para. 41).

[47] *See* IAFC and AMSA Reply Comments at 4.

[48] *See* Alliance (CA) Comments at 7-11.

require wireless service providers to transmit 911 calls from all handsets which transmit code identifications.

33. Thus, we are broadening the requirement to ensure that any person who attempts to place a 911 call through the facilities of a covered carrier will not be subject to any validation or similar carrier-initiated procedures that could result in a delay in the delivery of the 911 call to a PSAP. We accomplish this objective by requiring covered carriers to forward to PSAPs automatically all 911 calls from handsets that transmit a code identification. We note, however, that a covered carrier is required to forward to PSAPs only those calls from mobile units that transmit using an air interface protocol compatible with that used by the covered carrier's system.[49]

34. We have used the presence of a code identification in the signal transmitted by a mobile unit as the determining factor in requiring that the carrier immediately transmit the 911 call to a PSAP, without any further processing or validation by the carrier, for the following reasons. First, using the code identification as the triggering factor ensures that 911 calls will be routed to PSAPs with the minimum amount of delay. Carrier switches will screen incoming calls from mobile units, determine whether a code identification is present, and then (if such a code is present) immediately route the call to a PSAP without any further call screening. This prevention of delay, of course, is critically important in protecting the safety of lives and property in emergency situations.

35. Second, this approach ensures that virtually all subscribing customers -- including roamers -- will be able to place and complete 911 calls easily in emergencies, thus meeting one of our principal objectives in this rulemaking. Finally, using the presence of a code identification as the triggering factor may provide PSAPs with some basic information about the calling party, after carriers and PSAPs implement the first phase of E911. This will be useful, for example, in enabling PSAPs, in some cases, to call back the person seeking emergency assistance if the person's 911 call is disconnected.

36. We acknowledge that, since a handset programmed with a code identification could be in the possession of a person who is not a current subscriber to any wireless service, our requirement that carriers must transmit all 911 calls made from code identification handsets could result in the transmission of some 911 calls placed by non-subscribers. We do not view the possibility of such non-subscriber calls as a sufficient basis for us to modify or to refrain from imposing the requirement. As we have already explained, our requirement ensures that 911 calls from all subscribers and roamers will be transmitted, without the potential of delay resulting from the validation process. This objective would be seriously compromised if we permitted

[49] Such protocols determine access to, and thus processing of, calls within a system's architecture. While various wireless networks may use the same or similar architecture, different protocols may be employed. The Further Notice seeks additional comment regarding the ability of carriers to forward 911 calls from handsets that use incompatible transmission protocols.

carriers to validate all 911 calls for purposes of screening out calls from non-subscribers. We understand that, at present, there is no technical way to differentiate between subscribers and non-subscribers placing a 911 call without invoking authentication and validation procedures.[50] Given our belief that such procedures could unreasonably delay or prevent some 911 calls from being completed, we find that the public interest is best served by allowing all handsets with a code identification, both service-initialized and non-service-initialized, to make 911 calls. Moreover, if carriers prefer to limit the universe of non-subscribers they serve with respect to the transmission of 911 calls, then they may seek to follow practices to achieve this goal, such as modifying marketing techniques under which wireless phones with pre-programmed code identification numbers are available through retail merchandise outlets.[51]

37. In addition, if the PSAP Administrator requests that all 911 calls be forwarded from mobile handsets, we require covered carriers to automatically forward 911 calls from all handsets regardless of whether the handset has a code identification. We believe a strong case can be made for a requirement that carriers automatically forward *all* 911 calls to PSAPs, without any intervening validation, including cases in which the 911 call originates from a handset that does not have a code identification. The ability of non-subscribers to place 911 calls from code identification handsets could be of critical importance in emergency situations. We are not persuaded by arguments that such a requirement would impose an unfair regulatory burden on wireless providers relative to wireline carriers.[52] Moreover, our concerns regarding the risk of such a burden are mitigated by the fact that several major wireless carriers have been processing 911 calls without a validation requirement.[53] Further, for purposes of comparing 911 service burdens of wireline and wireless carriers, we believe that a pay telephone is the closest wireline analogy to a wireless handset, in terms of offering a capability of accessing 911 service while the user is away from his or her home or office. Users of pay phones are able to place 911 calls without any charge in many states as a result of state and local regulation.[54] Against this

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[50] *See* note 32, *supra*, and accompanying text.

[51] Some cellular carriers currently market entry-level service through mass market retailers. Cellular phones (with pre-programmed code identifications) can be purchased ``off the shelf'' and then can be activated by the purchaser through a call to an ``800'' number maintained by the carrier. *See* Bloomberg News Service, ``The Bells To Jointly Market Wireless,'' Apr. 10, 1996.

[52] *See* Vanguard (CA) Reply Comments at 6.

[53] *See, e.g.*, GTE Reply Comments at 11-13 (noting that GTE can and does route 911 calls placed from an operational mobile handset, regardless of whether the handset is service initialized, to a PSAP, or, where no PSAP exists, to a law enforcement agency or other destination based on arrangements with state and local authorities).

[54] *See, e.g.*, Fla. Stat. Ann. § 364.3375(2)(a)(West 1996) (requiring that each pay telephone station shall receive and permit coin-free access to the universal emergency telephone number ``911'' where operable); Idaho Code § 31-4811 (1995) (pay phones to be converted to allow emergency calls without charge); Iowa Code Ann. § 34A.4 (West 1996) (requiring conversion of pay telephones to allow 911 calls without depositing coins or paying other charges); Mass. Gen. Laws Ann. ch.166, § 14A (West 1996);

background, our rules regarding treatment of 911 calls originating on wireless networks does not appear to place wireless providers at a competitive disadvantage. We will, however, carefully monitor this situation and will be receptive to a petition seeking a change in our rules should our assumption prove incorrect.

38. At the same time, we recognize that there are disadvantages associated with requiring all 911 calls to be processed without regard to evidence that a call is emanating from an authorized user of *some* CMRS provider. Several carriers contend, for example, that placing 911 calls from handsets without a code identification has significant drawbacks, including the fact that ANI and call back features may not be usable, and hoax and false alarm calls may be facilitated.[55] According to these parties, call processing in such instances may interfere with the ability of public safety organizations to respond quickly to emergency situations. We note that public safety organizations are, in the final analysis, in the best position to determine whether acceptance of calls from handsets without a code identification helps or hinders their efforts to preserve and promote health and safety in their communities.

39. As a result, we believe that the decision as to whether to accept all calls from handsets to which no code identification has been assigned by a wireless service provider should reside at this time with the public safety organization administering the PSAP. Thus, at this time we will not require covered carriers to transmit non-code identification 911 calls to a PSAP unless the receipt of such calls is requested by a PSAP Administrator. Where a PSAP does make a request and is capable of receiving and utilizing the data elements associated with the service, covered carriers shall be required to transmit to the PSAP all non-code identification 911 calls that are received by the carrier's processing and transmission facilities.

40. We recognize that in certain jurisdictions carriers may be providing 911 to several PSAPs from the same switch. We find, however, that this circumstance should not be an obstacle to implementing the choice of PSAP Administrators to receive non-code identification 911 calls. First, we understand that current technology enables carrier switches selectively to transmit non-code identification 911 calls to some PSAPs and not to other PSAPs that receive calls routed from the same switch. Second, even in cases in which such switches have not been deployed, we believe that any complications caused by sharing a switch by PSAPs can be minimized by cooperation among PSAP Administrators in the geographic area involved to coordinate their decisions whether to receive non-code identification 911 calls. We note that public safety organizations have successfully cooperated on other issues[56] and we encourage

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Minn Stat. Ann. § 403.04(2) (West 1996); S.C. Code Ann. § 23-47-20(c)(12)(Law. Co-op. 1993); S.D. Codified Laws Ann. § 34-45-13 (1995); Wis. Stat. Ann. § 146.70 (West 1996).

[55] *See, e.g.*, AT&T Comments on Alliance Petition at 4-5; CTIA Comments at 13; BellSouth (CA) Comments at 10-11.

[56] In Gen Docket No. 87-112, a National Public Safety Plan to satisfy communications requirements was developed through a regional process involving the coordination and cooperation of Federal, state, and local public safety agencies. *See also,* The Development of Operational, Technical, and Spectrum

them to continue these cooperative efforts for purposes of coordinating the receipt of code identification calls and non-code identification 911 calls.

41. Some commenters requested clarification whether we intend to require that locked phones transmit 911 calls.[57] We understand that wireless service providers and customers have tried to control fraud problems by using PIN numbers or locked-in features. For example, wireless carriers often use ``PIN'' fraud control offerings, which are switch-based, not handset-based.[58] In addition, most handsets can be locked by the subscriber, who can then unlock the phone by dialing a three- or four-digit code to prevent unauthorized use of a cellular phone. While we recognize the need to control fraud in ordinary wireless calls, we believe that the benefit of allowing 911 calls to override a PIN system outweigh the cost associated with such requirements, because it is critical to pass 911 calls immediately in emergencies.

42. Although some carriers currently allow 911 calls to override the switch-based fraud protection system, there is insufficient information in the record to determine whether it is a universal practice by all wireless service providers. Because of the potential harm of requiring a PIN in emergency situations, we have decided to require covered carriers to permit dialing 911 to override the switch-based ``PIN'' numbers created by them. We also note that the Joint Paper and the JEM Report have identified the ability to transmit 911 calls from a subscriber locked phone to be a desired requirement.[59] Therefore, covered carriers are directed to make good faith efforts with manufacturers to ensure that, with respect to handsets manufactured in the future, these handsets are capable of overriding subscriber-programmed locking mechanisms and transmitting 911 calls.

43. Regarding a dialing standard for placing a 911 call, we agree with GTE that we should not adopt a rule requiring any particular dialing pattern for 911 access.[60] Although several commenters asked us to clarify that access to emergency personnel should be available by dialing ``9-1-1'' plus ``SEND'' key,[61] we recognize that some wireless handsets in use today do

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Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, WT Docket No. 96-86, Notice of Proposed Rulemaking, FCC 96-155, para. 32 (released Apr. 10, 1996) (*Public Safety NPRM*) (recognizing that some public safety agencies already have made efforts to address the problems associated with multi-jurisdictionaland multi-discipline interoperability).

[57] *See, e.g.*, AT&T Comments at 25; PCIA Comments at 7-8; APC Comments at 2-3.

[58] Wireless customer often get to pick their own PIN numbers, but those numbers must be programmed into the switch by the carrier.

[59] Joint Paper at 4; PCIA/JEM Report at 6, item 5.1.1.

[60] GTE Reply Comments at 14.

[61] *See, e.g.*, AT&T Comments at 24-25; Bell Atlantic Comments at 8; Ericsson Comments at 3; APCO Comments at 36.

not have a ``SEND" key.[62] Therefore, we require that 911 calls be available to all callers in a manner contemplated by the type of handset the customer uses.

44. With respect to the proposal made by Alliance that cellular phones must have the capability of selecting the strongest signal from either the A or the B carrier, we find that there is not a sufficient record to assess the proposal at this time. While all of the commenters to the Alliance petition urged denial of the proposal due to technical infeasibility and other equitable concerns,[63] the Alliance reiterates its argument that selection of the strongest signal in emergency situations is of critical importance to the public.[64] Because of the questions that have been raised with respect to its feasibility, we decline to adopt the rule recommended by the Alliance petition to the extent that it proposes to mandate the cellular handset to select the strongest signal whenever a cellular 911 call is placed. We note, however, that certain test results accompanying the Alliance reply comments may merit further examination of this issue.[65] Finally, we understand that a MIN is a telephone number assigned by the wireless service provider to its subscribers as part of the North American Numbering Plan. The North American Numbering Plan currently does not allow equipment manufacturers to obtain numbers in order to designate a unique MIN. Also, such an arrangement would interfere with the carrier's ability to assign numbers. Therefore, we do not agree with Alliance's proposal that the manufacturer assign unique MINs to mobile handsets.

45. We also recognize that there will be certain limitations to the requirement that all 911 calls be transmitted. Wireless mobile access to 911 will be limited, depending on the availability of 911 service in the geographic area. Moreover, the unique characteristics of wireless mobile services might preclude access in particular circumstances. Therefore, we have decided to seek further comment on the issue of how to increase the availability of wireless 911 communications in the Further Notice of Proposed Rulemaking.

46. As we have noted,[66] we are requiring that cost recovery mechanisms must be in place as a prerequisite to the imposition of enhanced 911 service requirements upon covered carriers. We note, however, that we are not adopting such a requirement as a prerequisite to compliance by covered carriers with the requirements we adopt in this section regarding the transmission of

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[62] GTE Reply Comments at 14.

[63] Some of commenters contended that the strongest *control* signal does not guarantee strongest *voice* signal. *See, e.g.,* AT&T Comments on Alliance at 7-8; BANM Comments on Alliance at 4; BellSouth Comments on Alliance at 3; CTIA Comments on Alliance at 10-11; PCIA Comments on Alliance at 7.

[64] Alliance (CA) Comments at 18.

[65] The test results are shown in Appendix E to the Alliance (CA) Comments. *See* Alliance (CA) Comments at 18.

[66] *See* Section II.B.1, *supra.*

911 calls with code identification numbers and non-code identification 911 calls. We recognize, however, that the establishment of regulatory requirements, especially regarding provision of basic 911 service to non-subscribers, might result in a carrier incurring additional costs related to the provision of such service to non-subscribers that may have a negative effect on levels of service and overall competition. Thus, a carrier may seek reimbursement, for its reasonable costs to provide basic 911 service to non-subscribers, at the state and local level. If any disputes arise in connection with recovery of these costs, the carrier may petition the Commission for relief.

### 2. 911 Access to Text Telephone Devices

#### a. Background, Pleadings, and Consensus Agreement

47. Title II of the Americans with Disabilities Act (ADA) requires access to state and local government services, such as 911, to people with hearing and speech disabilities on a non-discriminatory basis.[67] Further, the Telecommunications Act of 1996 requires manufacturers of telecommunications equipment or providers of telecommunications services to ensure that the equipment or services are accessible and usable by individuals with disabilities, if readily achievable.[68] In the *Notice,* we proposed that, within one year of the effective date of the Order adopting rules in this proceeding, radio services must be capable of permitting access by individuals with speech or hearing disabilities through means other than mobile radio handsets, *e.g.,* through the use of a TTY device. We sought comment on how to ensure access to 911 service by TTY-type devices that use wireless services, and requested comment on the specific additional features, costs, and feasibility issues that may be relevant to achieving compatibility.[69]

48. Most commenters agreed with our proposal that TTY devices should be available to assist hearing and speech impaired 911 callers who use wireless services.[70] Some commenters urged the Commission to ensure that the advantages of E911 are available equally to all callers, including TTY users, as a matter of safety and security. For example, TDI maintained that TTY users need assurance that they will have the benefit of ALI and ANI or at minimum ANI in locations where fully enhanced 911 calling systems exist.[71] In order to achieve functionally equivalent access of TTY users to the 911 emergency system, TDI suggested that Commission regulations should include: (1) speed in transmission of text; (2) the ability to interrupt and inject

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67 *See* 42 U.S.C. Section 12131-34.

68 Telecommunications Act of 1996, Pub. L. 104-104, 110 Stat. 56 (1996), Section 101, adding Section 255.

69 *Notice,* 9 FCC Rcd at 6180 (para. 54).

70 *See, e.g.,* APCO Comments at 49-50; TX-ACSEC Comments at 11; TDI Comments at 5; ICSAR Comments at 7; GTE Comments at 28; CMT Comments at 9.

71 TDI Comments at 2.

a point or question where dialogues are emergency personnel-centered; and (3) voice-carry-over (VCO) and hearing-carry-over (HCO) systems.[72] TDI also noted that if the mobile radio telephone industry could be required to offer units with an RJ11 jack for direct input, that would be of value to TTY users who currently have limited use of cellular phones due to the configuration, size and volume level of many of these phones in relation to TTY acoustic cups.[73]

49. While expressing support for our proposal, many commenters representing the wireless industry pointed out that this requirement will need coordination among many parties, including telecommunications and equipment manufacturing industries, the LECs and the PSAPs.[74] In the Consensus Agreement, however, the parties agree with our proposal without further conditions.[75] In their comments regarding the Consensus Agreement, wireless companies suggest various limitations on the provision of TTY access, such limiting to access through TTYs and through cellular circuit switched data service.[76] Commenters also note that CDMA vendors have been unable to pass through Baudot frequency signalling without distortion.[77] PCIA contends that the establishment of a common data standard under which wireless and wireline providers can deliver TTY data to the PSAP is the most important coordination issue for this requirement.[78] Some commenters argue that technological compatibility among PSAPs and wireless providers will also be necessary in order for the PSAPs to receive and interpret the transmitted data.[79] The parties thus suggest that the industry should determine and establish

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[72] *Id.* at 4.

[73] *Id.* at 5.

[74] *See, e.g.*, AT&T Comments at 39; PCIA Comments at 23; CTIA Comments at 15; Nextel Comments at 6; CMT Comments at 9.

[75] Consensus Agreement at 4.

[76] BellSouth (CA) Comments at 9-10; GTE (CA) Comments at 7.

[77] US West (CA) Comments at 9. This comment is based on the fact that Baudot signalling for TTY devices is generally at a much lower rate than that used by modems on current networks. The term ``Baudot'' refers to a code of 32 numbers used for alphabetic and symbolic communication, which was invented by J.M.E. Baudot in 1880. *See* R. Graf, MODERN DICTIONARY OF ELECTRONICS 88 (6th ed. 1989). TTY devices generally transmit and receive Baudot signals at a speed of 45.5 baud, half-duplex, while transmitting and receiving ASCII asynchronous code at a speed of 300 baud (minimum), full duplex. TTY devices generally must have the capability to determine the incoming communications mode (Baudot or ASCII), and answer in the appropriate communications mode without any operator intervention.

ASCII is an acronym for American Standard Code for Information Interchange. It is a standard code used extensively in data transmission, in which 128 numerals, letters, symbols, and special control codes are represented by a seven-bit binary number. *See id.* at 57.

[78] PCIA Comments at 24.

standards to permit interface between TTYs and wireless systems.[80]

**b. Discussion**

50. We find that the tentative conclusion in the *Notice* with regard to TTY access is supported by the record in this proceeding. Thus, we will require that, not later than 12 months after the effective date of the rules adopted in this proceeding, covered carriers must transmit TTY calls to 911 services.

51. TTY access to 911 services is important to the public safety of the 30 million Americans with hearing and speech disabilities. In light of the technical issues presented by commenters, however, we conclude that parties and industry standard bodies should coordinate their efforts to resolve these technical issues before the end of this calendar year. The objective of such coordination should be to establish standards that will permit interfaces between TTYs and wireless systems.

52. Although we recognize TDI's concerns that TTY users should also benefit from E911 features including ALI and ANI capabilities, we are of the view that at this time it would be prudent for the wireless industry, equipment manufacturers, PSAPs, and the disabled community to explore these issues to determine the extent of the problems and whether these issues might be resolved by agreements between the interested parties or by standard bodies. In that connection, we require that each of the signatories to the Consensus Agreement, PCIA, and TDI shall report to us jointly within one year after the effective date of the rules adopted in this proceeding regarding the status of the following issues: (1) whether incoming TTY 911 calls are properly identified in a timely manner by PSAPs, (*i.e.*, whether TTY call identification equipment is in place in PSAP facilities); and (2) at the time a TTY 911 call is identified by the PSAP, whether ANI and ALI are initiated before the call is transferred to a TTY designated extension.[81] In light of our decision in this Order regarding the provision of E911 and its importance in furthering our public safety goals, as well as our new statutory mandate to ensure accessibility to telecommunications services by persons with disabilities, if readily achievable,[82] we may initiate a further proceeding after we have obtained additional information.

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[79] *See, e.g.*, AT&T Comments at 39; PCIA Comments at 24; CTIA Comments at 15; Nextel Comments at 6.

[80] *See, e.g.*, PCIA Comments at 24; CTIA Comments at 15; CMT Comments at 9.

[81] In establishing this reporting requirement, and the other reporting requirements applicable to the signatories to the Consensus Agreement, PCIA, and TDI, we do not intend to impose any unnecessary burdens or costs on the entities involved in the preparation and submission of the reports. In this regard, we encourage these entities to use their discretion in preparing reports in a manner that reasonably responds to the issues, concerns, and information needs we identify in the Order without incurring any undue burdens.

[82] *See* Section 255 of the Communications Act, 47 U.S.C. § 255.

53. TDI has also requested that the Commission take certain actions to improve general access of TTY users to the 911 emergency system, including mandating the wireless telephone industry to offer units with direct connect capabilities for TTY access.[83] While these proposals may have merit, the record in this proceeding does not show that TDI's proposals are feasible.[84] Consequently, it will be more appropriate for us to address them in another proceeding, as TDI has suggested.[85] To this end, we expect to initiate in the near future a proceeding to implement the provisions of Section 255 and related provisions of the Communications Act, which will provide further guidance and direction regarding accessibility standards and requirements. In addition, we note that Section 255 requires the Architectural and Transportation Barriers Compliance Board to develop guidelines for ensuring that equipment used in conjunction with telecommunications services is accessible by persons with disabilities, if readily achievable. We will consider those guidelines in any further proceeding as a basis for establishing further requirements.

## B. Enhanced 911 Service Requirements and Provisions

### 1. E911 Deployment Schedule

#### a. Background, Pleadings and Consensus Agreement

54. In the *Notice*, we proposed to adopt rules to improve the access of users of mobile radio services to 911, particularly E911 service, noting that currently mobile radio services are unable to provide the information necessary for E911, such as the location of the caller (ALI), the number of caller (ANI), call back capability, while most of wireline customers who have 911 services have access to these features.[86] In order to render functionally equivalent E911 services to wireless customers, we proposed that the mobile handset must be able to communicate the information, *e.g.*, ANI and ALI, to the base station, and the base station must be able to interpret all information transmitted from the mobile unit. In addition, we proposed that the base station be able to give priority handling to 911 calls, and forward sufficient information to the PSAP to provide call back capability and location identification (enabling selective routing).[87] With respect to the ability to report the caller's location, we tentatively concluded that ALI should be implemented by wireless carriers in three steps over five years.[88] We also proposed to require

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[83] *See* TDI Comments at 3-6.

[84] *See, e.g.*, US West (CA) Comments at 9.

[85] TDI Comments at 6.

[86] *Notice*, 9 FCC Rcd at 6177 (para. 39-40).

[87] *Id.*

[88] *See* para. 0, *supra.*